



PATENTS
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)
Paul Johan Nederveen et al.)
Serial No.: 09/263,362)
Filed: March 5, 1999)
For: Remote Monitoring of Switch)
Network)

Examiner: Molinari, Michael J.

Art Unit: 2665

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June 25, 2004

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Linda E. Bowden

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Sir:

SUPPLEMENTAL APPEAL BRIEF

In response to the Office Action mailed on March 25, 2004, Applicants hereby submit this Supplemental Appeal Brief in triplicate.

REAL PARTY IN INTEREST

The real party in interest is Cisco Technology, Inc. by an Assignment recorded at reel 9807, frame 0923.

RELATED APPEALS AND INTEFERENCES

Applicants and Applicants' legal representatives know of no related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the present appeal.

STATUS OF CLAIMS

Claims 1-11 are in the case. A copy of the claims, in their current form, is attached hereto as an Appendix.

Claims 1-11 stand rejected under 35 U.S.C. §103(a).

STATUS OF THE AMENDMENTS

No Amendments have been filed subsequent to the Final Rejection dated September 30, 2003.

SUMMARY OF THE INVENTION

The invention is directed to a system for remotely gathering management information from a plurality of network switches. The system includes a plurality of network switches organized in a stack arrangement so as to appear as a single, logical switch network. In a first embodiment, each individual switch is coupled to a multiplexer which is also coupled to a single remote monitoring (RMON) probe. The RMON probe, in turn, is connected to a management process. In operation, a first network switch gains control over the multiplexer and utilizes the multiplexer to transmit raw data signals to the RMON probe. The RMON probe receives the raw data and converts it into a format that is usable by the management process. When the first network switch is done transmitting its raw data signals, a second switch gains control over the multiplexer and transmits its

raw data signals via the multiplexer to the RMON probe. The RMON probe converts the raw data signals from the second switch into a format usable by the management process. These steps are repeated such that each individual switch transmits its raw data signals via the multiplexer to the RMON probe.

In a second embodiment, each individual switch is provided with a probe port. The probe port of a first switch is coupled directly to the RMON probe without utilizing a multiplexer. The remaining switches are then connected, e.g., in series, to the first switch through their respective probe ports. Raw data signals are collected at each probe port. The first switch, moreover, selectively, e.g., sequentially, couples each of the individual switches (including itself) one at a time to the RMON probe. The switch that is currently coupled to the RMON probe transmits its raw data signals. As with the first embodiment, the raw data signals are converted by the RMON probe into a format that is usable by the management process.

Significantly, the switches do not have any management entities of their own. Instead, the single, remote RMON probe acts as the management entity for all of the network switches. This simplifies the design and reduces the cost of the switches.

ISSUES

I. Whether claims 9-11, which meet all other conditions of patentability under Title 35, are unpatentable under 35 U.S.C. 103(a) over U.S. Patent 6,243,756 to Whitmire et al. (hereinafter "Whitmire") in further view of U.S. Patent 5,835,914 to Brim (hereinafter "Brim") wherein Whitmire and Brim either separately or in combination do not provide any teaching or suggestion for i) a separate and remote monitoring probe that re-

ceives switch activity-related information from a plurality of network switches and converts that data into network management-related data, and ii) transmitting switch activity-related information, received at probe ports, to the separate and remote monitoring probe.

II. Whether claims 1-8, which meet all other conditions of patentability under Title 35, are unpatentable under 35 U.S.C. 103(a) over Whitmire in further view of Brim where Whitmire and Brim either separately or in combination do not provide any teaching or suggestion for i) a multiplexer separate from a plurality of switches for selectively connecting, according to an arbitration scheme, the plurality of switches one at a time to a remote entity and, ii) data that is supplied to the remote entity via the multiplexer in accordance with the arbitration scheme are converted by the remote entity into network management-related information.

GROUPING OF CLAIMS

As set forth above, there are two groups of claims. The claims of in these groups, however, do not stand or fall together.

ARGUMENT

A. Issue I: Claims 9-11 rejected under 35 U.S.C. §103(a)

Independent claim 9 recites, in relevant part:

“A system for use in gathering network management information, said system comprising:”

* * *

“a connection between the probe port of a first network switch to a **monitoring probe that is separate and remote** from the plurality of network switches,” and

* * *

“means for selectively transmitting the switch activity-related information received at the probe ports of the network switches to the separate and remote monitoring probe, one network switch at a time, through the probe port of the first network switch, wherein”,

“the separate and remote monitoring probe converts the received switch activity-related information into network management-related information.”

As is shown above in claim 9, probe ports disposed at the network switches receive switch activity-related information, i.e., raw data signals, and transmit that data to a monitoring probe that is “separate and remote” from the plurality of network switches. The monitoring probe, moreover, converts the switch activity-related information into network management-related information, i.e., into a format that is useable by a management station.

1. Whitmire fails to disclose a monitoring probe that is both separate and apart from the switches, and is configured to convert raw data signals into management-related information.

Whitmire discloses a plurality, e.g., five, repeaters coupled together to form a single, integrated system. See Col. 5, lines 34-37 (“a system according to the present invention provides an internetworking system that operates with segments of different media standards and/or transmission rates in a single integrated device”). The five repeaters are interconnected by a common backplane. See Col. 6, lines 39-40 (repeaters are “physically and logically coupled together across a common backplane bus”). One of the repeaters, i.e., repeater 102, is designated the management repeater, and a management agent 1302 is disposed on that management repeater 102. See Col. 8, lines 38-40 (the management agent 1302 is “within a management module within the managing repeater

102”). The management agent 1302, which forms part of repeater 102, creates and maintains one or more Management Information Bases (MIBs). See Col. 23, lines 36-39. Each MIB contains objects that represent resources associated with the repeaters. Further, each MIB object is associated with an object identifier (OID) that is used to access the object and a value. See Whitmire, Col. 23, line 33 to Col. 24, lines 14.

Whitmire further discloses a management platform 116 that sends requests to the management agent 1302 located on the management repeater 102 to access the values of the MIB objects. A request, as issued by the management platform 116, contains an OID that identifies the MIB object and an operation (e.g., GET, GETNEXT, and SET) that identifies the action to be taken on the object. On receiving such a request, the management agent 1302 accesses the identified MIB object, and performs the operation contained in the request on behalf of the management platform. See Col. 24, lines 14-48.

In rejecting this claim, the Office Action equates Whitmire’s management platform 116 with the claimed “monitoring probe.” This is improper, however, as Whitmire provides no disclosure that its management platform 116 converts switch activity-related information into network management-related information as recited in claim 9.

As shown above, the data accessed by Whitmire’s management platform 116 is already in the form of MIB objects, which are stored in the managing repeater 102 itself. See Col. 8, lines 23-40. In fact, Whitmire’s management platform 116 can directly “browse” the MIB objects or may issue SNMP requests to the management agent 1302 to

retrieve the network management-related information from the MIB objects. See Col. 8, lines 23-40. Because the data received by Whitmire's management platform 116 is already in the form of MIB objects, Whitmire fails to provide any disclosure that its management platform 116 performs any conversion process at all. Indeed, it would make no sense for Whitmire's management platform 116 to perform any such conversion process because it receives the data in the format it is looking for, i.e., as MIB objects.

The fact that Whitmire's management platform 116 does not perform any conversion process is further confirmed by Whitmire's inclusion of a remote network monitoring (RMON) MIB 1314 inside its management repeater 102. More specifically, Fig. 13 of Whitmire which is a block diagram of Whitmire's management repeater 102 clearly shows that the RMON 1314 is part of repeater 102. See Col. 22, lines 48-49 (stating that Fig. 13 is a block diagram of the management repeater), and Col. 23, line 58 (stating that the RMON is within the management repeater). Because Whitmire's management repeater 102 already has an RMON MIB, its management platform 116 receives already converted data. Thus, Whitmire's management platform 116 has no need to perform any conversion process of its own.

The Office Action contends that Whitmire discloses a browser that converts input data into a format that can be viewed by a user. Moreover, the Office Action cites Brim as an example where browsers are used to translate data so that users can view the data.

Applicants submit, however, that neither Whitmire nor Brim teach or suggest converting switch activity-related information into network management-related infor-

mation by a separate remote monitoring probe, as recited in claim 9. Whitmire indicates that the management platform 116 may be as simple as a MIB browser. See Col. 8, lines 28-32. However, as noted above, since the data browsed by the management platform (i.e., MIB browser) is already in the form of MIB objects, the browser need not convert the data into e.g., management information, as the data is already in a form the browser expects (i.e., MIB objects). Further, while Brim notes that a browser receives and translates instructions that define a Web page, it does so for purposes of creating the Web page. See Col. 2, lines 16-19. Nowhere does Brim suggest or teach that a browser converts switch-activity related information into management-related information as is claimed by claim 9.

2. Whitmire fails to disclose transmitting switch activity-related information, received at probe ports, to a separate and remote monitoring probe.

The Office Action contends that Whitmire, at Col. 8, lines 20-50, discloses Applicants' claimed transmission of switch activity-related information from probe ports of network switches to a separate and remote monitoring probe. Applicants submit that Whitmire provides no such disclosure

In the cited section, Whitmire describes managing the stacked repeaters in two ways: first, in an "in-band" manner through a selected data port of the management repeater 102 and, second, in an "out-of-band" manner through a serial port on the management repeater. See Col. 8, lines 20-26 and Col. 24, lines 29-31. Whitmire then goes on to disclose using the Simple Network Management Protocol (SNMP), VT100 terminal emulation, or SNMP along with Serial Line Internet Protocol (SLIP) to manage the re-

peaters in an out-of-band manner. See Col. 8, lines 26-50. All of this activity, however, takes place between the management repeater 102 and the management platform 116. As described above, moreover, the data transmitted to the management platform 116, is not switch activity-related information, but has instead already been converted into the MIB object format.

Whitmire provides no disclosure of receiving switch activity-related information at probe ports of switches and then transmitting that information, one switch at a time, to a monitoring probe. With Whitmire, data is received and converted by the management agent 1302 disposed on the management repeater 102. The management agent 1302 then sends converted information to the management platform 116 in response to requests from platform 116.

Because Whitmire and Brim either singly or in combination fail to disclose (1) a monitoring probe that is separate and remote from network switches, and configured to convert switch activity-related information into network management activity-related information, and (2) means for transmitting switch activity-related information received at probe ports of network switches to a remote monitoring probe, one switch at a time, the rejections of claims 9-11 based on Whitmire in further view of Brim should be reversed.

B. Issue II: Claims 1-8 rejected under 35 U.S.C. §103(a)

Independent claim 1 recites, in relevant part:

“A system for use in gathering information for use in managing a network, said system comprising:”

* * *

“an entity separate and remote from the plurality of switches for gathering said information” and

“a multiplexer separate and remote from the plurality of network switches for selectively connecting, according to an arbitration scheme, said plurality of network switches one at a time to said remote entity wherein”

“each network switch is connected to said multiplexer by a separate connection, and transmits port activity-related data that are supplied to the remote entity via the multiplexer in accordance with the arbitration scheme, and are converted by the remote entity into network management-related information”.

As shown above, a multiplexer separate and remote from a plurality of network switches connects the network switches, according to an arbitration scheme, to a remote entity. Each network switch transmits port activity-related data to the remote entity via the multiplexer. The remote entity converts the port-activity data to management-related information.

1. Whitmire fails to disclose a multiplexer separate and remote from the plurality of network switches for selectively connecting, according to an arbitration scheme, the plurality of network switches one at a time to the remote entity.

Applicants submit that Whitmire fails to teach or suggest a “multiplexer” as recited in claim 1. The Office Action contends that Whitmire’s repeater 102 meets Applicants’ claimed “multiplexer”. Applicants respectfully disagree.

First, far from being separate and remote, Whitmire’s repeater 102 is one of the very repeaters making up Whitmire’s system 100. See Figs. 1A and 3. All of Whitmire’s repeaters, including repeater 102, moreover, are connected together to form a single system. See Col. 6, lines 38-40 (“repeaters 102, 104, 106, 108 and 110 [are] *physically and logically coupled together* across a common backplane bus 112”). Fur-

thermore, moving repeater 102 away from the other repeaters 104-110, as suggested in the Office Action, does not somehow render repeater 102 separate and remote from a plurality of network switches. Regardless of where or how far away repeater 102 is placed, it is and always will be one of the repeaters that form Whitmire's system 100. In contrast, Applicants specifically recite a particular device, i.e., a multiplexer, that is separate and remote from the plurality of network switches. This is illustrated at Fig. 3 and pp. 17-18 of Applicants' Specification. Because Whitmire's management repeater 102 is physically connected to all the other repeaters, it cannot possibly be "separate and remote from the plurality of network switches" as recited in claim 1.

Second, Whitmire fails to teach or suggest a multiplexer configured for "selectively connecting, according to an arbitration scheme, said plurality of network switches one at a time to said remote entity". The Office Action appears to contend that Whitmire's backplane bus 112 meets this claimed limitation. As shown in Figs. 1A and 3 and as described at Col. 6, lines 39-40, Whitmire's backplane bus 112 interconnects just the repeaters 102-110. It is not connected to any entity that is remote from the repeaters for gathering network management-related information. For example, Whitmire provides no teaching or suggestion for somehow connecting its management platform 116 to the backplane bus 112. In addition, Whitmire provides no teaching or suggestion for using its backplane bus 112 to selectively connect repeaters 102-110, one at a time, to the management platform 116. Therefore, Whitmire's backplane bus 122 cannot satisfy this limitation of claim 1.

2. Whitmire and Brim fail to disclose data that is supplied to the remote entity via the multiplexer in accordance with the arbitration scheme and are converted by the remote entity into network management-related information.

The Office Action contends that Whitmire's management platform 116 contains a browser that converts input data into a format that can be viewed by a user. Moreover, the Office Action cites Brim as an example where browsers are used to translate data so that the data can be viewed by users. Applicants submit that browsers, as taught by Whitmire and Brim, do not convert port activity-related information into network management-related information as recited in claim 1.

Instead, as noted above, Whitmire's management platform 116 (browser) receives information that has already been converted into the format of MIB objects. Thus, no conversion of data into management information need take place at the browser as the data is already in a form the browser expects (i.e., MIB objects). Further, while Brim notes that a browser receives and translates instructions that define a Web page, it does so for purposes of creating the Web page. See Col. 2, lines 16-19. No where does Brim suggest or teach converting port-activity related information into management-related information as is claimed by claim 1.

Because Whitmire and Brim either singly or in combination fail to disclose (1) a multiplexer separate from a plurality of switches for selectively connecting, according to an arbitration scheme, the plurality of switches one at a time to a remote entity and, (2) data that is supplied to the remote entity via the multiplexer in accordance with the arbitration scheme and are converted by the remote entity into network management-related

information the rejections of claims 1-8 based on Whitmire in further view of Brim should be reversed.

CONCLUSION

Applicants respectfully submit that claims 1-11 are allowable over the art of record. Accordingly, Applicants request that the rejections of these claims be reversed.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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APPENDIX

(Claims on Appeal in Appl. Ser. No. 09/263,362)

1. A system for use in gathering information for use in managing a network, said system comprising:

a plurality of network switches logically organized in a stack configuration so as to operate as a single logical switch, each network switch having a plurality of ports;

an entity separate and remote from the plurality of switches for gathering said information;

a multiplexer separate and remote from the plurality of network switches for selectively connecting, according to an arbitration scheme, said plurality of network switches one at a time to said remote entity, wherein

each network switch is connected to said multiplexer by a separate connection, and transmits port activity-related data that are supplied to the remote entity via the multiplexer in accordance with the arbitration scheme, and are converted by the remote entity into network management-related information.

2. A system according to claim 1, wherein said entity comprises a remote monitoring probe.

3. A system according to claim 1, wherein said multiplexer comprises a network hub.

4. A system according to claim 1, wherein said multiplexer comprises a network media access unit.

5. A system according to claim 1, wherein said switches are configured to generate control signals for implementing said arbitration scheme.
6. A system according to claim 5, wherein said multiplexer is configured to be controlled by said control signals.
7. A system according to claim 1, wherein said port activity-related data comprises switch port activity information, and said switches are configured to permit user selection of particular switch port activity information to be supplied to the remote entity via the multiplexer.
8. A system according to claim 1, further comprising program processes executed by said switches for carrying out said arbitration scheme.
9. A system for use in gathering network management information, said system comprising:
- a plurality of network switches configured in a stacked configuration, each switch having a plurality of ports including a probe port for receiving switch activity-related information from other ports of the respective switch;
 - a connection between the probe port of a first network switch to a monitoring probe that is separate and remote from the plurality of network switches;
 - means for interconnecting the network switches through their respective probe ports; and

means for selectively transmitting the switch activity-related information received at the probe ports of the network switches to the separate and remote monitoring probe, one network switch at a time, through the probe port of the first network switch, wherein the separate and remote monitoring probe converts the received switch activity-related information into network management-related information.

10. A system according to claim 9, wherein said switches are configured to implement an arbitration scheme for determining the order in which the activity-related information of each switch is provided to said probe.

11. (Previously presented) A system according to claim 9, wherein said probe ports being solely for transmission of said activity-related information.

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